Rock Barrier (ft)

Definition

A rock retaining wall constructed across the slope to form and support a bench terrace that will control the flow of water and check erosion on sloping land.

Scope

This standard applies to all rock barriers 6 ft or less in height on land slopes as much as 50 percent.

Purpose

To stablize steeply sloping land so that it can be farmed with a minimum of soil loss.

Conditions where practice applies

Rock barriers are applicable to land suitable for cultivation where soil depth is adequate for benching and where the effectiveness of less intensive measures for soil and water conservation would be questionable. Suitable natural outlets or satisfactory sites for constructing outlets must be available.

Design criteria

Grade. The top of the rock barrier may be level or have a grade toward the outlet. Maximum grade shall be 0.5 percent.

Cross slope. The bench between barriers shall have a negative slope from the top of one barrier to the toe of the upslope barrier. Cross slopes shall have a grade of 1.0 to 3.0 percent.

Surface drain. Surface drainage shall be provided by a longitudinal ditch not less than 0.5 ft^2 in area along the toe of the upslope barrier.

Height. The height of the rock barrier shall not exceed 6 ft.

Base width. The minimum base width shall be 18 in. plus 1.5 in. for each 0.5 ft of height in excess of 2.5 ft. The exposed face of the barrier shall have a batter of 3 in./ft of height.

Vertical interval. Vertical interval between adjacent benches shall not exceed 5 ft.

Horizontal interval. The minimum horizontal distance between barriers shall be 10 ft.

Plans and specifications

Plans and specifications for constructing rock barriers shall be in keeping with this standard and shall describe the requirements for applying the practice to achieve its intended purpose.

Rock Barrier Specifications

Construction shall be carried out as follows:

1. Construction shall begin with the top barrier.
2. A vertical cut equal to one-half the height of the barrier shall be made along the stake line.
3. Topsoil shall be stockpiled for spreading on the surface of the bench as construction is completed.
4. The foundation for the barrier shall be shaped so that the full base width is smooth and uniform.
5. As the barrier is built, the area behind it shall be kept filled with soil.
6. The area above the barrier shall be smoothed to design cross slope and the drainage ditch shall be constructed according to plan.
7. Topsoil shall be spread over the completed bench.

Construction operations shall be carried out in such a manner that erosion and air and water pollution are minimized and held within legal limits.

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Planning considerations for water quantity and quality

Quantity

1. Effects on the water budget, especially on volumes and rates of runoff, infiltration, evaporation, transpiration, deep percolation, and ground water recharge.
2. Potential for a change in plant growth and transpiration because of changes in the volume of soil water.
3. Effects on downstream flows or aquifers that would affect other water uses .
4. Effects on the volume of downstream flow to prohibit undesirable environmental, social or economic effects.
5. The effect on the water table of the field to ensure that it will provide a suitable rooting depth for anticipated land uses.
6. Potential use for water management.

Quality

1. Effects on erosion and the movement of sediment, pathogens, and soluble and sediment-attached substances carried by runoff.
2. Effects of the use and management of nutrients and pesticides on surface and ground water quality.
3. Effects on the visual quality of downstream water resources.
4. Short-term and construction-related effects on this practice on the quality of downstream water.
5. Potential for development of saline seeps or other salinity problems resulting from increased infiltration near restrictive soil layers.
6. Potential for earth moving to uncover or redistribute toxic materials, or low productive soils.
7. Effects on the movement of dissolved substances below the root zone toward ground water.
8. Effects on wetlands or water-related wildlife habitats associated with the practice.